We claim:

1. A chemical compound of the general formula

$$R_1\text{-}R_2\text{-}Si\text{-}(X_1)_3,$$

wherein

X_1 is a leaving group,

R_2 is a cycloalkyl having from 3 to 16 carbon atoms, an aryl having from 5 to 18 carbon atoms or a polycyclic alkyl group having from 7 to 16 carbon atoms, and

R_1 is a substituent of R_2 selected from alkyl groups having from 1 to 4 carbon atoms, alkenyl groups having from 2 to 5 carbon atoms, alkynyl groups having from 2 to 5 carbon atoms, and aromatic groups having 5 or 6 carbon atoms, each of said groups being optionally substituted, and Cl and F.

2. The chemical compound of claim 1, wherein

X_1 is a leaving group selected from halogen, acyloxy, alkoxy and OH groups,

R_2 is an aromatic group having 5 or 6 carbon atoms or a non-aromatic ring structure having from 5 to 7 carbons, and

R_1 is a substituent at position 4 of R_2 selected from alkyl groups having from 1 to 4 carbon atoms, alkenyl groups having from 2 to 5 carbon atoms, alkynyl groups having from 2 to 5 carbon atoms, and aromatic groups having 5 or 6 carbon atoms, each of said groups being optionally substituted, and Cl and F.

3. The compound of claim 1 or 2, wherein R1 is a linear or branched carbon chain having from 1 to 4 carbons, which is optionally fluorinated or perfluorinated.

4. The compound of any of claims 1 to 3, wherein

R_1 is selected from the group consisting of $-CF_3$, $-CF_2CF_3$, $-CF_2CF_2CF_3$, $-CF_2OH$, $-CF_2CF_2OH$, $-CF_2(CF_2)_2OH$, $-CF_2(CF_2)_2CF_3$, $-CF_2(CF_2)_3OH$, a carbon chain having a carbon-carbon double bond and from 2 to 5 carbons, a vinyl group, an acrylic group, an alkenyl group having from 1 to 4 carbons, and $-Si\text{-}(X_2)_3$, where X_2 is a halogen.

5. The compound of any of claims 1 to 4, wherein X_1 is chlorine or ethoxy,

6. The compound according to claim 4 or 5, wherein X_2 is chlorine.

7. The compound of any of claims 1 to 6, wherein R_2 is an aromatic group selected from the group of aromatic groups having 5 or 6 carbon atoms and further being substituted at positions 3 and 5.

8. The compound of claim 7, wherein R_2 is substituted at positions 3 and 5 with a group $-CF_3$.

9. The compound of claim 1 or 2, wherein R_1 is $-CH_3$, $-CH_2CH_3$, $-CH_2CH_2CH_3$, $-(CH_2)CF_3$, $-CH_2CH_2OH$ or $-CH_2CF_2OH$.

10. A poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain cross-linking groups and $-R_1-R_2$ bound to from 5 % to 50 % of the silicon atoms in the Si-O backbone, wherein R_2 is an aromatic group having 6 carbon atoms and R_1 is a substituent at position 4 of R_2.

11. The compound of claim 10, wherein
X_1 is a halogen, acyloxy, alkoxy or OH group,
R_2 is an aromatic group having 5 or 6 carbon atoms or a non-aromatic ring structure having from 5 to 7 carbons, and
R_1 is a substituent at position 4 of R_2 selected from alkyl groups having from 1 to 4 carbon atoms, alkenyl groups having from 2 to 5 carbon atoms, alkynyl groups having from 2 to 5 carbon atoms, and aromatic groups having 5 or 6 carbon atoms, each of said groups being optionally substituted, and Cl and F.

12. The compound of claim 10 or 11, wherein R1 is a linear or branched carbon chain having from 1 to 4 carbons, which is optionally fluorinated or perfluorinated.

13. The compound of any of claims 10 to 12, wherein R_1 is selected from the group consisting of $-CF_3$, $-CF_2CF_3$, $-CF_2CF_2CF_3$, $-CF_2OH$, $-CF_2CF_2OH$, $-CF_2(CF_2)_2OH$, $-CF_2(CF_2)_2CF_3$,

$-CF_2(CF_2)_3OH$, a carbon chain having a carbon-carbon double bond and from 2 to 5 carbons, a vinyl group, an acrylic group, an alkenyl group having from 1 to 4 carbons, and $-Si-(X_2)_3$, where X_2 is a halogen.

14. The compound of any of claims 10 to 13, wherein X_1 is chlorine or ethoxy,

15. The compound according to claims 13 or 14, wherein X_2 is chlorine.

16. The compound of any of claims 10 to 15, wherein R_2 is an aromatic group selected from the group of aromatic groups having 5 or 6 carbon atoms and further being substituted at positions 3 and 5.

17. The compound of claim 16, wherein R_2 is substituted at positions 3 and 5 with a group $-CF_3$.

18. The compound of claim 10, wherein R_1 is $-CH_3$, $-CH_2CH_3$, $-CH_2CH_2CH_3$, $-(CH_2)CF_3$, $-CH_2CH_2OH$ or $-CH_2CF_2OH$. wherein R1 is a carbon chain of from 1 to 4 carbons.

19. The compound of claim 10, wherein R_1 is a carbon chain having a carbon-carbon double bond and from 2 to 5 carbons.

20. The compound of claim 19, wherein R_1 is a vinyl group.

21. The compound of claim 19, wherein R_1 is an acrylic group.

22. The compound of claim 10, wherein R_2 is a non-aromatic ring structure having from 5 to 7 carbons.

23. The compound of claim 10, wherein the Si-O backbone further comprises R_3 groups bound to from 5% to 25% of the silicon atoms in the Si-O backbone, wherein R_3 is an alkyl chain having from 1 to 4 carbon atoms, an alkenyl chain or aryl group

24. The compound of claim 23, wherein R_3 is a non-fluorinated or partially fluorinated or perfluorinated hydrocarbon chain.

25. The compound of claim 24, wherein R_3 is CF_3, CH_3, CH_2CH_3, or CF_2CF_3.

26. The compound of claim 23, wherein R_3 is a carbon chain having from 1 to 4 carbon atoms and an –OH group.

27. The compound of claim 26, wherein R3 is CF_2OH or CF_2CF_2OH.

28. The compound of claim 26, having a dielectric constant of 2.7 or less, preferably 2.5 or less, in particular 2.3 or less.

29. A poly(organo siloxane) compound comprising a repeating Si-O backbone, -R1-R2 bound to from 25% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 6 carbon atoms and R1 is a substituent at position 4 of R2 (again this could be drawn out for clarity), and R3 bound to from 5% to 50% of the silicon atoms, wherein R3 is an alkenyl group having from 2 to 5 carbon atoms, acrylic group or epoxy group.

30. The compound of claim 29, wherein R1 is a linear or branched carbon chain having from 1 to 4 carbons, which is optionally fluorinated or perfluorinated.

31. The compound of claim 29 or 30, wherein
R_1 is selected from the group consisting of $–CF_3$, $–CF_2CF_3$, $–CF_2CF_2CF_3$, $–CF_2OH$, $–CF_2CF_2OH$, $–CF_2(CF_2)_2OH$, $–CF_2(CF_2)_2CF_3$, $–CF_2(CF_2)_3OH$, a carbon chain having a carbon-carbon double bond and from 2 to 5 carbons, a vinyl group, an acrylic group, an alkenyl group having from 1 to 4 carbons, and $–Si-(X_2)_3$, where X_2 is a halogen.

32. The compound of any of claims 29 to 30, wherein X_1 is chlorine or ethoxy,

33. The compound according to claim 31 or 32, wherein X_2 is chlorine.

34. The compound of any of claims 29 to 33, wherein R_2 is an aromatic group selected from the group of aromatic groups having 5 or 6 carbon atoms, such as phenyl, and further being substituted at positions 3 and 5.

35. The compound of claim 34, wherein R_2 is substituted at positions 3 and 5 with a group $-CF_3$.

36. The compound of claim 29, wherein R_1 is $-CH_3$, $-CH_2CH_3$, $-CH_2CH_2CH_3$, $-(CH_2)CF_3$, $-CH_2CH_2OH$ or $-CH_2CF_2OH$.

37. The compound of claim 29, wherein R_3 is an epoxy group, such as a glycidoxypropyl group, an acrylic group, an acryl group, such as a methacrylic group, an alkenyl group having from 2 to 5 carbon atoms, a vinyl group.

38. The compound of any of claims 29 to 37, further comprising R4 groups bound to from 5 to 50% of the silicon atoms of the Si-O backbone, wherein R4 is an alkyl group having from 1 to 4 carbon atoms.

39. The compound of claim 38, wherein R4 is CH3, CH2CH3, (CH2)2CH3, CF3, CF2CF3 or (CF2)2CF3.4

40. The compound of any of claims 29 to 39, having a dielectric constant of 2.7 or less, preferably 2.5 or less, in particular 2.5 or less.

41. An integrated circuit having a layer with areas of an electrically conductive first material and an electrically insulating second material, wherein the second material is a poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 6 carbon atoms and R1 is a substituent at position 4 of R2.

42. The circuit of claim 41, wherein R1 is a linear or branched carbon chain having from 1 to 4 carbons, which is optionally fluorinated or perfluorinated.

43. The compound of claim 41 or 42, wherein
R_1 is selected from the group consisting of $-CF_3$, $-CF_2CF_3$, $-CF_2CF_2CF_3$, $-CF_2OH$, $-CF_2CF_2OH$, $-CF_2(CF_2)_2OH$, $-CF_2(CF_2)_2CF_3$, $-CF_2(CF_2)_3OH$, a carbon chain having a carbon-carbon double bond and from 2 to 5 carbons, a vinyl group, an acrylic group, an alkenyl group having from 1 to 4 carbons, and $-Si-(X_2)_3$, where X_2 is a halogen.

44. The compound of any of claims 41 to 43, wherein X_1 is chlorine or ethoxy,

45. The compound according to claim 43 or 44, wherein X_2 is chlorine.

46. The compound of any of claims 42 to 45, wherein R_2 is an aromatic group selected from the group of aromatic groups having 5 or 6 carbon atoms, such as phenyl, and further being substituted at positions 3 and 5.

47. The compound of claim 46, wherein R_2 is substituted at positions 3 and 5 with a group $-CF_3$.

48. The compound of claim 42, wherein R_1 is $-CH_3$, $-CH_2CH_3$, $-CH_2CH_2CH_3$, $-(CH_2)CF_3$, $-CH_2CH_2OH$ or $-CH_2CF_2OH$.

49. The compound of claim 42, wherein R2 is a non-aromatic ring structure having from 5 to 7 carbons.

50. The compound of any of claims 42 to 49, wherein X1 is an alkoxy group, ethoxy group, acyloxy group, an OH group.

51. The compound of any of claims 42 to 50, wherein R1 is CH2, CH2CH3, (CH2)2CH3, (CH2)CF3, CH2CH2OH or CH2CF2OH.

52. A computer comprising an integrated circuit having a layer with areas of an electrically conductive first material and an electrically insulating second material, wherein the second material is a poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the

silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 6 carbon atoms and R1 is a substituent at position 4 of R2).

53. A method for making an integrated circuit, comprising providing alternating areas of electrically insulating and electrically conducting materials within a layer on a semiconductor substrate, wherein the electrically insulating material comprises a poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 6 carbon atoms and R1 is a substituent at position 4 of R2 selected from an alkyl chain having from 1 to 4 carbons, an alkenyl group having from 2 to 6 carbons or OH.

54. The method of claim 53, wherein the electrically insulating material is deposited, baked and patterned, with the electrically conductive material being deposited in removed areas of the patterned dielectric.

55. The method of claim 54, wherein the electrically conductive material comprises copper.

56. The method of claim 55, which is a dual damascene process.

57. A method of making a chemical compound of the formula R_1-R_2-Si-$(X_2)_3$, wherein X_2 is a halogen, R_2 is an aromatic group having 5 to 18 carbon atoms, a cycloalkyl having from 3 to 16 carbon atoms, or a polycyclic alkyl group having from 7 to 16 carbon atoms, and R_1 is a substituent, in particular at position 4 of R_2, R_1 being selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, alkenyl groups having from 2 to 5 carbon atoms, and OH groups, comprising:

- reacting a compound of the formula R_1-R_2-Br, wherein R_1 and R_2 have the same meaning as above, with Mg and with a compound of the formula Si-$(OR_3)_4$, wherein R_3 is an alkoxy group having from 1 to 3 carbon atoms, to form a compound of the formula R_1-R_2-Si-$(OR_3)_3$, wherein R_1, R_2 and R_3 have the same meaning as above;
- reacting the thus obtained compound of the formula R_1-R_2-Si-$(OR_3)_3$ with a halogenating agent capable of replacing, preferably each, R_3 with a halogen

substantially without affecting the rest of the compound of formula R_1-R_2-Si-$(OR_3)_3$ to produce a compound of the formula R_1-R_2-SiX_2, wherein R_1, R_2 and X_2 have the same meaning as above, and

- recovering the thus obtained compound.

58. The of claim 57 for making a chemical compound of the formula R1-R2-Si-(X1)3, wherein X1 is a halogen or alkoxy group, R2 is an aromatic group having 6 carbon atoms and R1 is a substituent at position 4 of R2, R1 being selected from an alkyl group having from 1 to 4 carbon atoms, an alkenyl group having from 2 to 5 carbon atoms, or OH, comprising:

- reacting R1-R2-Br with Mg and Si-(OR3)4 to form R1-R2-Si-(OR3)3 + BrMgOR, where R1 is selected from an alkyl group having from 1 to 4 carbon atoms, an alkenyl having from 2 to 5 carbon atoms, R2 is an aromatic or non-aromatic ring structure having from 5 to 7 carbon atoms, and R3 is an alkoxy group having from 1 to 3 carbon atoms; and
- reacting R1-R2-Si-(OR3)3 with 3 SO2Cl2 in the presence of C5H5N-HCl to yield R1-R2-SiCl3 + 3 SO2 + 3EtCl.

59. A chemical compound of the formula R1-R2-Si-(X1)3, wherein X1 is a halogen, acyloxy, alkoxy or OH group, R2 is an organic polycyclic or bridged ring structure with Si bound to carbon position 1, and R1 is a substituent at position 3 or higher of R2 selected from an alkyl group having from 1 or more carbons atoms, an alkenyl, an alkynyl, an acrylate, an aryl, an alcohol, OH, H, D, Cl or F.

60. The compound of claim 59, wherein R2 is an interlocking ring structure with one of the rings having 6 carbons.

61. The compound of claim 60, wherein R2 is an interlocking ring structure with one of the rings having 4 carbons.

62. The compound of claim 61, wherein R2 is further substitued at positions 3 and 5.

63. The compound of claim 185, wherein R2 is substitued at positions 3 and 5 with CF3.

64. The compound of claim 60, wherein R2 is an interlocking ring structure with 2 rings, a first ring having at least 4 carbons and a second ring having at least 6 carbons.

65. The compound of any of claims 59 to 64, wherein R1 has the same meaning as above in any of claims 30 to 39.

66. The compound of any of claims 59 to 65, wherein X1 is an alkoxy group, ethoxy group, acyloxy group, an OH group.

67. The compound of any of claims 59 to 66, wherein R1 is CH2, CH2CH3, (CH2)2CH3, (CH2)CF3, CH2CH2OH or CH2CF2OH.

68. A poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is polycyclic or bridged ring strcture and R1 is a substituent at position 4 of R2 selected from an alkyl chain having from 1 to 4 carbons, H, D, F or OH.

69. The compound of claim 68, wherein

X_1 is a halogen, acyloxy, alkoxy or OH group,

R_2 is an aromatic group having 5 or 6 carbon atoms or a non-aromatic ring structure having from 5 to 7 carbons, and

R_1 is a substituent at position 4 of R_2 selected from alkyl groups having from 1 to 4 carbon atoms, alkenyl groups having from 2 to 5 carbon atoms, alkynyl groups having from 2 to 5 carbon atoms, and aromatic groups having 5 or 6 carbon atoms, each of said groups being optionally substituted, and Cl and F.

70. The compound of claim 68 or 69, wherein R1 is a linear or branched carbon chain having from 1 to 4 carbons, which is optionally fluorinated or perfluorinated.

71. The compound of any of claims 68 to 70, wherein R_1 is selected from the group consisting of $-CF_3$, $-CF_2CF_3$, $-CF_2CF_2CF_3$, $-CF_2OH$, $-CF_2CF_2OH$, $-CF_2(CF_2)_2OH$, $-CF_2(CF_2)_2CF_3$,

$-CF_2(CF_2)_3OH$, a carbon chain having a carbon-carbon double bond and from 2 to 5 carbons, a vinyl group, an acrylic group, an alkenyl group having from 1 to 4 carbons, and $-Si-(X_2)_3$, where X_2 is a halogen.

72. The compound of any of claims 68 to 71, wherein X_1 is chlorine or ethoxy,

73. The compound according to any of claims 70 to 72, wherein X_2 is chlorine.

74. The compound of any of claims 68 to 73, wherein R_2 is an aromatic group selected from the group of aromatic groups having 5 or 6 carbon atoms and further being substituted at positions 3 and 5.

75. The compound of claim 74, wherein R_2 is substituted at positions 3 and 5 with a group $-CF_3$.

76. The compound of claim 68, wherein R_1 is $-CH_3$, $-CH_2CH_3$, $-CH_2CH_2CH_3$, $-(CH_2)CF_3$, $-CH_2CH_2OH$ or $-CH_2CF_2OH$. wherein R1 is a carbon chain of from 1 to 4 carbons.

77. The compound of claim 68, wherein R_1 is a carbon chain having a carbon-carbon double bond and from 2 to 5 carbons.

78. The compound of claim 68, wherein R_1 is a vinyl group.

79. The compound of claim 68, wherein R_1 is an acrylic group.

80. The compound of claim 68, wherein R_2 is a non-aromatic ring structure having from 5 to 7 carbons.

81. The compound of claim 80, wherein the Si-O backbone further comprises R3 groups bound to from 5% to 25% of the silicon atoms in the Si-O backbone, wherein R3 is an alkyl chain having from 1 to 4 carbon atoms.

82. The compound of claim 81, wherein R3 is a non-fluorinated, partially fluorinated or perfluorinated hydrocarbon group, selected from CF3, CH3, CH2CH3 and CF2CF3.

83. The compound of claim 81, wherein R3 is a carbon chain having from 1 to 4 carbon atoms and an –OH group, such as CF2OH or CF2CF2OH.

84. The compound of any of claims 68 to 83, having a dielectric constant of 2.7 or less, preferably 2.5 or less, in particular 2.3 or less.

85. A poly(organo siloxane) compound comprising a repeating Si-O backbone, -R1-R2 bound to from 25% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is a polycyclic or bridged ring structure and R1 is a substituent at position 4 of R2 selected from H, D, F, OH, an alkyl group having from 1 to 4 carbon atoms, and an alkenyl group having from 2 to 5 carbon atoms, and further comprising R3 bound to from 5% to 50% of the silicon atoms, wherein R3 is an alkenyl group having from 2 to 5 carbon atoms, acrylic group, aryl group or epoxy group.

86. The compound of claims 85, wherein

X_1 is a halogen, acyloxy, alkoxy or OH group,

R_2 is an aromatic group having 5 or 6 carbon atoms or a non-aromatic ring structure having from 5 to 7 carbons, and

R_1 is a substituent at position 4 of R_2 selected from alkyl groups having from 1 to 4 carbon atoms, alkenyl groups having from 2 to 5 carbon atoms, alkynyl groups having from 2 to 5 carbon atoms, and aromatic groups having 5 or 6 carbon atoms, each of said groups being optionally substituted, and Cl and F.

87. The compound of claims 85 or 86, wherein R1 is a linear or branched carbon chain having from 1 to 4 carbons, which is optionally fluorinated or perfluorinated.

88. The compound of any of claims 85 to 87, wherein

R_1 is selected from the group consisting of $-CF_3$, $-CF_2CF_3$, $-CF_2CF_2CF_3$, $-CF_2OH$, $-CF_2CF_2OH$, $-CF_2(CF_2)_2OH$, $-CF_2(CF_2)_2CF_3$, $-CF_2(CF_2)_3OH$, a carbon chain having a carbon-carbon double bond and from 2 to 5 carbons, a vinyl group, an acrylic group, an alkenyl group having from 1 to 4 carbons, and $-Si-(X_2)_3$, where X_2 is a halogen.

89. The compound of any of claims 85 to 88, wherein X_1 is chlorine or ethoxy,

90. The compound according to claims 88 or 89, wherein X_2 is chlorine.

91. The compound of any of claims 85 to 90, wherein R_2 is an aromatic group selected from the group of aromatic groups having 5 or 6 carbon atoms and further being substituted at positions 3 and 5.

92. The compound of claim 91, wherein R_2 is substituted at positions 3 and 5 with a group $-CF_3$.

93. The compound of claim 85, wherein R_1 is $-CH_3$, $-CH_2CH_3$, $-CH_2CH_2CH_3$, $-(CH_2)CF_3$, $-CH_2CH_2OH$ or $-CH_2CF_2OH$.

94. The compound of claim 85, wherein R1 is CH2, CH2CH3, (CH2)2CH3, (CH2)CF3, CH2CH2OH or CH2CF2OH.

95. The compound of claim 85, wherein R3 is an epoxy group, such as glysidoxypropyl, or an acrylic group, such as a methacrylic group, an alkenyl group having from 2 to 5 carbon atoms, such as vinyl, or phenyl .

96. The compound of any of claims 85 to 95, further comprising R4 groups bound to from 5 to 50% of the silicon atoms of the Si-O backbone, wherein R4 is an alkyl group having from 1 to 4 carbon atoms.

97. The compound of claim 96, wherein R4 is CH3, CH2CH3, (CH2)2CH3, CF3, CF2CF3, (CF2)2CF3.

98. The compound of any of claims 85 to 97, having a dielectric constant of 2.7 or less, preferably 2.5 or less, in particular 2.3 or less.

99. An integrated circuit having a layer with areas of an electrically conductive first material and an electrically insulating second material, wherein the second material is a

poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is a polycyclic or bridged ring structure and R1 is a substituent at position 4 of R2 selected from H, D, F, OH, an alkyl group having from 1 to 4 carbon atoms, and an alkenyl group having from 2 to 5 carbon atoms.

100. The compound of claim 99, wherein R1 is a carbon chain of from 1 to 4 carbons, which is optionally fluorinated or perfluorinated.

101. The compound of claim 99 or 100, wherein R1 is a branched carbon chain.

102. The compound of claim 99, wherein R1 is CF3, CF2CF3, CF2CF2CF3, CF2OH, CF2CF2OH or (CF2)3OH, (CF2)3CF3, (CF2)4OH.

103. A computer comprising an integrated circuit having a layer with areas of an electrically conductive first material and an electrically insulating second material, wherein the second material is a poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is a polycyclic or bridged ring structure and R1 is a substituent at position 4 of R2.

104. A method for making an integrated circuit, comprising providing alternating areas of electrically insulating and electrically conducting materials within a layer on a semiconductor substrate, wherein the electrically insulating material comprises a poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is a polycyclic or bridged ring structure and R1 is a substituent at position 4 of R2 selected from an alkyl chain having from 1 to 4 carbons, H, D, F or OH.

105. The method of claim 104, wherein the electrically insulating material is deposited, baked and patterned, with the electrically conductive material being deposited in removed areas of the patterned dielectric.

106. The method of claim 106, wherein the electrically conductive material comprises copper.

107. The method of claim 318, which is a dual damascene process.

108. A chemical compound of the formula R1-R2-Si-(X1)3, wherein X1 is a halogen, acyloxy, alkoxy or OH group, R2 is an aromatic group having 8 carbon atoms and R1 is a substituent at position 5 of R2 selected from an alkyl group having from 1 to 4 carbon atoms, an alkenyl group having from 2 to 5 carbon atoms, an alkynyl group having from 2 to 5 carbon atoms, Cl or F.

109. The compound of claim 108, wherein R1, R2 and X1 have the same meaning as above in any of claims 11to 22.

110. The compound of claim 108 or 109, wherein R2 is further substitued at positions 4 and 6.

111. The compound of claim 110, wherein R2 is substitued at positions 4 and 6 with CF3.

112. The compound of any of claims 108 to 111, wherein R2 is a non-aromatic ring structure having from 5 to 7 carbons.

113. A poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 8 carbon atoms and R1 is a substituent at position 5 of R2.

114. The compound of claim 113, wherein R1, R2 and X1 have the same meaning as above in any of claims 11 to 22.

115. The compound of claim 113, wherein R2 is further substitued at positions 4 and 6.

116. The compound of claim 115, wherein R2 is substitued at positions 4 and 6 with CF3.

117. The compound of any of claims 113 to 116, wherein R2 is a non-aromatic ring structure having from 5 to 7 carbons.

118. The compound of any of claims 113 to 116, wherein the Si-O backbone further comprises R3 groups bound to from 5% to 25% of the silicon atoms in the Si-O backbone, wherein R3 is an alkyl chain having from 1 to 4 carbon atoms, an alkenyl chain or aryl group.

119. The compound of claim 118, wherein R3 is a non-fluorinated, partially fluorinated or perfluorinated hydrocarbon group, selected from CF3, CH3, CH2CH3 and CF2CF3.

120. The compound of claim 119, wherein R3 is a carbon chain having from 1 to 4 carbon atoms and an –OH group, such as CF2OH or CF2CF2OH.

121. The compound of any of claims 113 to 120, having a dielectric constant of 2.7 or less, preferably 2.5 or less, in particular 2.3 or less.

122. A poly(organo siloxane) compound comprising a repeating Si-O backbone, -R1-R2 bound to from 25% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 8 carbon atoms and R1 is a substituent at position 5 of R2 (again this could be drawn out for clarity), and R3 bound to from 5% to 50% of the silicon atoms, wherein R3 is an alkenyl group having from 2 to 5 carbon atoms, acrylic group or epoxy group.

123. The compound of claim 122, wherein the substituents R1, R2, R3, X1 and X2 have the same meaning as above in any of claims 30 to 39.

124. The compound of claim 122 or 123, further comprising R4 groups bound to from 5 to 50% of the silicon atoms of the Si-O backbone, wherein R4 is an alkyl group having from 1 to 4 carbon atoms.

125. The compound of claim 124, wherein R4 is CH3, CH2CH3, (CH2)2CH3, CF3, CF2CF3, (CF2)2CF3.

126. The compound of any of claims 122 to 125, having a dielectric constant of 2.7 or less, preferably 2.5 or less, in particular 2.3 or less.

127. An integrated circuit having a layer with areas of an electrically conductive first material and an electrically insulating second material, wherein the second material is a poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 8 carbon atoms and R1 is a substituent at position 5 of R2.

128. The circuit of claim 447, wherein R1, R2 and X2 have the same meaning as in any of claims 30 to 39.

129. A computer comprising an integrated circuit having a layer with areas of an electrically conductive first material and an electrically insulating second material, wherein the second material is a poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 8 carbon atoms and R1 is a substituent at position 5 of R2.

130. A method for making an integrated circuit, comprising providing alternating areas of electrically insulating and electrically conducting materials within a layer on a semiconductor substrate, wherein the electrically insulating material comprises a poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 8 carbon atoms and R1 is a substituent at position 5 of R2 selected from an alkyl chain having from 1 to 4 carbons, an alkenyl group having from 2 to 6 carbons or OH.

131. The method of claim 130, wherein the electrically insulating material is deposited, baked and patterned, with the electrically conductive material being deposited in removed areas of the patterned dielectric.

132. The method of claim 131, wherein the electrically conductive material comprises copper.

133. The method of claim 132, which is a dual damascene process.

134. A chemical compound of the formula R1-R2-Si-(X1)3, wherein X1 is a halogen, acyloxy, alkoxy or OH group, R2 is an aromatic group having 10 carbon atoms and R1 is a substituent at position 6 of R2 selected from an alkyl group having from 1 to 4 carbon atoms, an alkenyl group having from 2 to 5 carbon atoms, an alkynyl group having from 2 to 5 carbon atoms, Cl or F.

135. The compound of claim 134, wherein R1, R2, X1 and X2 have the same meaning as in any of claims 30 to 39.

136. The compound of claim 134 or 135, wherein R2 is a phenyl group, optionally substituted at positions 5 and 7.

137. The compound of claim 136, wherein R2 is substituted at positions 5 and 7 with CF3.

138. The compound of claim 134 or 135, wherein R2 is a non-aromatic ring structure having from 5 to 7 carbons.

139. A poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 10 carbon atoms and R1 is a substituent at position 6 of R2.

140. The compound of claim 139, wherein R1, R2 and X2 have the same meaning as in any of claims 30 to 39 above.

141. The compound of claim 140, wherein R2 is a phenyl group, optionally substituted at positions 5 and 7.

142. The compound of claim 141, wherein R2 is substitued at positions 5 and 7 with CF3.

143. The compound of claim 139, wherein R2 is a non-aromatic ring structure having from 5 to 7 carbons.

144. The compound of claim 139, wherein the Si-O backbone further comprises R3 groups bound to from 5% to 25% of the silicon atoms in the Si-O backbone, wherein R3 is an alkyl chain having from 1 to 4 carbon atoms, an alkenyl chain or aryl group

145. The compound of claim 144, wherein R3 is a non-fluorinated, partially fluorinated or perfluorinated hydrocarbon group, having a carbon chain of 1 to 4 carbon atoms and optionally containing an –OH group.

146. The compound of claim 146, wherein R3 is CF3, CH3, CH2CH3, CF2CF3, CF2OH or CF2CF2OH.

147. The compound of any of claims 139 to 146, having a dielectric constant of 2.7 or less, preferably 2.5 or less, in particular 2.3 or less.

148. A poly(organo siloxane) compound comprising a repeating Si-O backbone, -R1-R2 bound to from 25% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 10 carbon atoms and R1 is a substituent at position 6 of R2, and R3 bound to from 5% to 50% of the silicon atoms, wherein R3 is an alkenyl group having from 2 to 5 carbon atoms, acrylic group or epoxy group.

149. The compound of claims 148, wherein R1, R2, R3, X2 have the same meaning as above in any of claims 30 to 39.

150. The compound of claim 149, further comprising R4 groups bound to from 5 to 50% of the silicon atoms of the Si-O backbone, wherein R4 is an alkyl group having from 1 to 4 carbon atoms.

151. The compound of claim 150, wherein R4 is CH3, CH2CH3, (CH2)2CH3, CF3, CF2CF3, (CF2)2CF3.

152. The compound of any of claims 148 to 151, having a dielectric constant of 2.7 or less, preferably 2.5 or less, in particular 2.3 or less.

153. An integrated circuit having a layer with areas of an electrically conductive first material and an electrically insulating second material, wherein the second material is a poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 10 carbon atoms and R1 is a substituent at position 6 of R2.

154. The compound of claim 153, wherein R1, R2 and X2 have the same meaning as above in any of claims 30 to 39.

155. A computer comprising an integrated circuit having a layer with areas of an electrically conductive first material and an electrically insulating second material, wherein the second material is a poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 10 carbon atoms and R1 is a substituent at position 6 of R2.

156. A method for making an integrated circuit, comprising providing alternating areas of electrically insulating and electrically conducting materials within a layer on a semiconductor substrate, wherein the electrically insulating material comprises a poly(organo siloxane) compound comprising a repeating Si-O backbone, carbon chain crosslinking groups and -R1-R2 bound to from 5% to 50% of the silicon atoms in the Si-O backbone, wherein R2 is an aromatic group having 10 carbon atoms and R1 is a substituent at position 6 of R2 selected from an alkyl chain having from 1 to 4 carbons, an alkenyl group having from 2 to 6 carbons or OH.

157. The method of claim 156, wherein the electrically insulating material is deposited, baked and patterned, with the electrically conductive material being deposited in removed areas of the patterned dielectric.

158. The method of claim 157, wherein the electrically conductive material comprises copper.

159. The method of claim 158, which is a dual damascene process.

160. A method for making a chemical compound of the formula R1-R2-Si-(X1)3, wherein X1 is a halogen or alkoxy group, R2 is an aromatic group having 10 carbon atoms and R1 is a substituent at position 6 of R2, R1 being selected from an alkyl group having from 1 to 4 carbon atoms, an alkenyl group having from 2 to 5 carbon atoms, or OH, comprising:

reacting R1-R2-Br with Mg and Si-(OR3)4 to form R1-R2-Si-(OR3)3 + BrMgOR, where R1 is selected from an alkyl group having from 1 to 4 carbon atoms, an alkenyl having from 2 to 5 carbon atoms, R2 is an aromatic or non-aromatic ring structure having from 5 to 7 carbon atoms, and R3 is an alkoxy group having from 1 to 3 carbon atoms;

reacting R1-R2-Si-(OR3)3 with 3 SO2Cl2 in the presence of C5H5N-HCl to yield R1-R2-SiCl3 + 3 SO2 + 3EtCl.

161. The compound of claim 1, wherein R2 is further substitued at positions 3 and 4.

162. The compound of claim 161, wherein R2 is substitued at positions 3 and 4 with CF3.

163. The compound of claim 161 or 162, wherein R2 is substitued at position 3 with CF3 and at position 4 with CH3.

164. A thin film comprising a composition obtained by hydrolyzing

- a monomeric silicon compound having at least one hydrocarbyl radical, containing an unsaturated carbon-to-carbon bond, and at least one hydrolyzable group attached to the silicon atom of the compound with
- another monomeric silicon compound having at least one aryl group and at least one hydrolyzable group attached to the silicon atom of the compound

to form a siloxane material.

165. The thin film according to claim 164, wherein the composition comprises a cross-linked poly(organosiloxane).

166. The thin film according to claim 164, wherein the composition comprises a poly(organosiloxane) obtained by

hydrolyzing a first silicon compound having the general formula I

$$Y1_{3-a}\text{-}SiR1_bR2_cR3_d \qquad I$$

wherein Y1 represents a hydrolyzable group;
R1 is an aromatic group having 6 carbon atoms and R1 is a substituent at position 4 of R1 selected from an alkyl group having from 1 to 4 carbon atoms, an alkenyl group having from 2 to 5 carbon atoms, an alkynyl group having from 2 to 5 carbon atoms, Cl or F;
R2 and R3 are independently selected from hydrogen, substituted or non-substituted alkyl groups, substituted or non-substituted alkenyl and alkynyl groups, and substituted or non-substituted aryl groups;
a is an integer 0, 1 or 2;
b is an integer a+1;
c is an integer 0, 1 or 2;
d is an integer 0 or 1; and
$b + c + d = 3$

with a second silicon compound having the general formula II

$$Y2_{3-e}\text{-}SiR4_fR5_gR6_h \qquad II$$

wherein Y2 represents a hydrolyzable group;
R4 is an aromatic group having 6 carbon atoms and R4 is a substituent at position 4 of R4 selected from an alkyl group having from 1 to 4 carbon atoms, an alkenyl group having from 2 to 5

carbon atoms, an alkynyl group having from 2 to 5 carbon atoms, Cl or F;

R5 and R6 are independently selected from hydrogen, substituted or non-substituted alkyl groups, substituted or non-substituted alkenyl and alkynyl groups, and substituted or non-substituted aryl groups;

e is an integer 0, 1 or 2;

f is an integer e+1;

g is an integer 0, 1 or 2;

h is an integer 0 or 1; and

$f + g + h = 3$.